

## Textbook Alignment to the Utah Core – Pre-Calculus

*This alignment has been completed using an “Independent Alignment Vendor” from the USOE approved list ([www.schools.utah.gov/curr/imc/indvendor.html](http://www.schools.utah.gov/curr/imc/indvendor.html).) Yes ☐ No ☒*

Name of Company and Individual Conducting Alignment: McDougal Littell and Betty L. Schiddell

A “Credential Sheet” has been completed on the above company/evaluator and is (Please check one of the following):

☐ On record with the USOE.

☒ The “Credential Sheet” is attached to this alignment.

Instructional Materials Evaluation Criteria (name and grade of the core document used to align): Pre-Calculus Core Curriculum

Title: Pre-calculus with Limits: A Graphing Approach ISBN#: SE: 978-0-618-85152-2

Publisher: McDougal Littell

Overall percentage of coverage in the *Student Edition (SE)* and *Teacher Edition (TE)* of the Utah State Core Curriculum: 89%

Overall percentage of coverage in *ancillary materials* of the Utah Core Curriculum: N/A%

| <b>STANDARD I: Students will use the language and operations of algebra to evaluate, analyze and solve problems.</b> |  |  |   |  |
|--|--|--|---|--|
| <b>Percentage of coverage in the <i>student and teacher edition</i> for Standard I: <u>100 %</u></b>                 |  | <b>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard I: <u>N/A%</u></b>      |   |  |
| <b>OBJECTIVES &amp; INDICATORS</b>   |  | <b>Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)</b>  | <b>Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)</b> | <b><i>Not covered in TE, SE or ancillaries</i> ✓</b> |
| <b>Objective 1.1: Compute with matrices and use matrices to solve problems.</b>                                      |  |  |   |  |
| <b>a.</b>  | Represent real-world situations with matrices.   | 524, 525 (#83-86), 539 (#77-84), 540 (#104), 549 (#65-76), 550 (#77-78), 559, 564-566, 567 (#27), 568 (#28-36), 573 (#119-120), 575 (#181-186) |   |  |
| <b>b.</b>  | Add, subtract, and multiply (including scalar multiplication) matrices using paper and pencil, and computer programs or calculators. | 526-535, 536-539   |   |  |
| <b>c.</b>  | Demonstrate that matrix multiplication is associative and distributive, but not commutative.   | 529-530  |   |  |
| <b>d.</b>  | Determine additive and multiplicative identities and inverses of a matrix when they exist.   | 529, 533, 541-545  |   |  |
| <b>e.</b>  | Solve systems of linear equations with up to three variables using matrices.   | 514, 516-519, 523  |   |  |
| <b>Objective 1.2: Analyze the behavior of sequences and series.</b>  |  |  |   |  |
| <b>a.</b>  | Describe a sequence as a function where the domain is the set of natural numbers.  | 580  |   |  |
| <b>b.</b>  | Represent sequences and series using various notations.  | 580, 582, 584-585  |   |  |
| <b>c.</b>  | Identify arithmetic and geometric sequences and series.  | 592-595, 601-605   |   |  |
| <b>d.</b>  | Discover and justify the formula for a finite arithmetic series.   | 657  |   |  |
| <b>e.</b>  | Discover and justify the formulas for finite and infinite geometric series.  | 657  |   |  |

| STANDARD II: Students will understand and represent functions and analyze function behavior.   |  |   |  |  |
|--|--|---|--|--|
| Percentage of coverage in the <i>student and teacher edition</i> for Standard II: <u>100 %</u> |  | Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard II: <u>N/A%</u> |  |  |
| OBJECTIVES & INDICATORS  |  | Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)  | Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.) | Not covered in <i>TE, SE</i> or <i>ancillaries</i> ✓ |
| <b>Objective 2.1: Analyze and solve problems using polynomial functions.</b>                   |  |   |  |  |
| a.   | Raise a binomial to a power using the Binomial Theorem and Pascal's Triangle.  | 619-623, 624  |  |  |
| b.   | Determine the number and nature of solutions to polynomial equations with real coefficients over the complex numbers.  | 140-143, 145 (#37-42)   |  |  |
| c.   | Factor polynomials to solve equations and real-world applications.   | 120, 128 (#39-42)   |  |  |
| d.   | Understand the relationships among the solutions of a polynomial equation, the zeros of a function, the $x$ -intercepts of a graph, and the factors of a polynomial. | 106-109, 111, 113 (#23-32), 121, 122-126, 128, 139-143, A128  |  |  |
| e.   | Write an equation with given solutions.  | 103, 113 (#48-58)   |  |  |
| <b>Objective 2.2: Model and graph functions and transformations of functions.</b>              |  |   |  |  |
| a.   | Model real-world relationships with functions.   | 26 (#73), 27-28, 29 (#86), 40 (#91-92), 97-98, 100 (#54), 101, 114 (#92-94)   |  |  |
| b.   | Graph rational, piece-wise, power, exponential and logarithmic functions.  | 19-20, 30, 35, 39 (#43-50), 92-94, 103, 109-110, 113 (#33-48), 185-186, 193 (#5-12), 198, A127, A129                                |  |  |
| c.   | Identify the effects of changing the parameter $a$ in $y = af(x)$ , $y = f(ax)$ , $y = f(x - a)$ , and $y = f(x) + a$ , given the graph of $y = f(x)$ .              | 47, 48 (#1-12), 43-44, 187, 199   |  |  |

| OBJECTIVES & INDICATORS                                  |   | Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)        | Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.) | <i>Not covered in TE, SE or ancillaries</i> ✓ |
|--|---|---|--|---|
| <b>Objective 2.3: Analyze the behavior of functions.</b> |   |   |  |   |
| <b>a.</b>  | Identify the domain, range, and other attributes of families of functions and their inverses.   | 16-21, 62, 66-67, 93, 104, 147, 186, 199, 201   |  |   |
| <b>b.</b>  | Approximate instantaneous rates of change and find average rates of change using graphs and numerical data.   | 14 (#75-78), 806-807, 809 (#65), 810 (#66)  |  |   |
| <b>c.</b>  | Identify and analyze continuity, end behavior, asymptotes, symmetry (odd and even functions) and limits, and connect these concepts to graphs of functions. | 36-37, 40 (#59-66), 103-105, 147-150, 153 (#13-22), 157-159, 161, 162 (#55-64), 781-784, A127 |  |   |
| <b>d.</b>  | Determine intervals over which a function is increasing or decreasing, and describe the intervals using interval notation.                                  | 32, 39 (#19-30)   |  |   |
| <b>e.</b>  | Relate the graphical representation of discontinuities and end behavior to the concept of limit.  | 783, 789 (#31-32, 35-36)  |  |   |

| <b>STANDARD III: Students will use algebraic, spatial and logical reasoning to solve geometry and measurement problems.</b> |   |   |   |  |
|---|---|---|---|--|
| <b>Percentage of coverage in the <i>student and teacher edition</i> for Standard III: <u>100 %</u></b>                      |   | <b>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard III: <u>N/A%</u></b> |   |  |
| <b>OBJECTIVES &amp; INDICATORS</b>  |   | <b>Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)</b>   | <b>Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)</b> | <b><i>Not covered in TE, SE or ancillaries</i> ✓</b> |
| <b>Objective 3.1: Solve problems using trigonometry.</b>  |   |   |   |  |
| <b>a.</b>   | Define the six trigonometric functions using the unit circle.   | 270-271   |   |  |
| <b>b.</b>   | Prove trigonometric identities using definitions, the Pythagorean Theorem or other relationships.   | 280, 354, 358 (#39-50), 360-367, A131   |   |  |
| <b>c.</b>   | Simplify trigonometric expressions and solve trigonometric equations using identities.  | 353, 355, 357 (#27-38), 358 (#51-68), A131  |   |  |
| <b>d.</b>   | Solve problems using the Law of Sines and the Law of Cosines.   | 408-416, 417-423  |   |  |
| <b>e.</b>   | Construct the graphs of the trigonometric functions and their inverses, and describe their behavior, including periodicity and amplitude. | 297-302, 304-308, 309-319, 320-322, 327 (#10-12), A131  |   |  |
| <b>Objective 3.2: Graph curves using polar and parametric equations.</b>  |   |   |   |  |
| <b>a.</b>   | Define and use polar coordinates and relate them to Cartesian coordinates.  | 707-708   |   |  |
| <b>b.</b>   | Represent complex numbers in rectangular and polar form, and convert between rectangular and polar form.                                  | 448-449, 456 (#1-8, 17-36)  |   |  |
| <b>c.</b>   | Translate equations in Cartesian coordinates into polar coordinates and graph them in the polar coordinate plane.                         | 708-712   |   |  |
| <b>d.</b>   | Multiply complex numbers in polar form and use DeMoivre's Theorem to find roots of complex numbers.                                       | 450-455, 458  |   |  |
| <b>e.</b>   | Define a curve parametrically and draw parametric graphs.   | 699-701, 704 (#1-8), 705 (#11-32)   |   |  |

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|--|--|--|--|---|
| <b>Objective 3: Solve problems involving the geometric properties of conic sections.</b> |  |  |  |   |
| <b>a.</b>  | Write equations of conic sections in standard form.  | 660-665, 667, 668 (#75-82), 672-673, 680-681, 686-687                                  |  |   |
| <b>b.</b>  | Identify the geometric properties of conic sections (i.e., vertex, foci, lines of symmetry, directrix, major and minor axes and asymptotes). | 665-666, 668 (#45-72), 671-672, 682-683, 688 (#31-42), 687 (#15-24)                    |  |   |
| <b>c.</b>  | Solve real-world applications of conic sections.   | 669-670, 675, 678, 679 (#54), 685, 688 (#43-47)  |  |   |

| <b>STANDARD IV: Students will understand concepts from probability and statistics and apply statistical methods to solve problems.</b> |  |  |   |  |
|--|--|--|---|--|
| <b>Percentage of coverage in the <i>student and teacher edition</i> for Standard IV: <u>56 %</u></b>                                   |  | <b>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard IV: <u>N/A%</u></b> |   |  |
| <b>OBJECTIVES &amp; INDICATORS</b>   |  | <b>Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)</b>  | <b>Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)</b> | <b><i>Not covered in TE, SE or ancillaries</i> ✓</b> |
| <b>Objective 4.1: to calculate approximate probabilities.</b>  |  |  |   |  |
| <b>a.</b>  | Obtain sample spaces and probability distributions for simple discrete random variables.   | 637-644, 645 (#1-6)  |   |  |
| <b>b.</b>  | Compute binomial probabilities using Pascal's Triangle and the Binomial Theorem.   | 619-623, 625 (#105-108)  |   |  |
| <b>c.</b>  | Compute means and variances of discrete random variables.  |  |   |  |
| <b>d.</b>  | Compute probabilities using areas under the Normal Curve.  | 229  |   |  |
| <b>e.</b>  | Calculate parameters of sampling distributions for the sample average, sum, and proportion.  |  |   |  |
| <b>f.</b>  | Calculate probabilities in real problems using sampling distributions.   | 646-648  |   |  |
| <b>Objective 4.2: Analyze bivariate data using linear regression methods.</b>  |  |  |   |  |
| <b>a.</b>  | Fit regression lines to pairs of numeric variables and calculate the means and standard deviations of the two variables and the correlation coefficient, using technology. | A13-A14  |   |  |
| <b>b.</b>  | Compute predictions of y-values for given x-values using a regression equation, and recognize the limitations of such predictions.   |  |   |  |
| <b>c.</b>  | Compute and use the standard error for regression.   |  |   |  |